

ABSTRACT OF THE INVENTION

Hematin, a hydroxyferriprotoporphylin, is derivatized with one or more non-proteinaceous amphipathic groups. The derivatized hematin can serve as a mimic of horseradish peroxidase in polymerizing aromatic monomers, such as aromatic
5 compounds. These derivatized hematins can also be used as catalysts in polymerizing aromatic monomers, and can exhibit significantly greater catalytic activity than underivatized hematin in acidic solutions. In one embodiment, polymerization is in the presence of a template, along which aromatic monomers align. An assembled hematin includes alternating layers of hematin and a polyelectrolyte, which are deposited on an
10 electrically charged substrate. Assembled hematin can also be used to polymerize aromatic monomers.